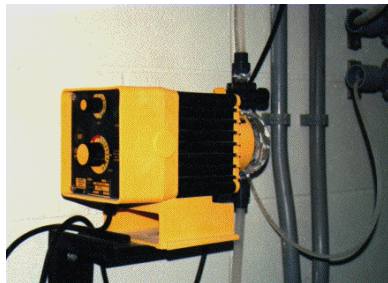




**STATE OF MAINE  
DRINKING WATER PROGRAM  
DIVISION OF HEALTH ENGINEERING  
BUREAU OF HEALTH  
DEPARTMENT OF HUMAN SERVICES  
11 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0011**

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**CONTINUOUS CHLORINATION DISINFECTION SYSTEM INSTALLATION  
GUIDANCE DOCUMENT.**



*A chemical feed pump*

Use this guide to help start up your continuous chlorination disinfection system. If you have any questions, contact Field Services at 287-2070.

The Drinking Water Program recommends that you contact a water treatment professional for an evaluation of your water and water system before installation of a chlorination system. Elevated levels of iron, manganese and other inorganics may interfere with the intended operation of your chlorination system. Additionally, other treatment processes may affect or be affected by the addition of chlorine.

1. Purchase a flooded suction chemical feed pump. Flooded suction pumps are less likely to become airborne. Keep the pump supplier's number handy for spare parts and manuals.
2. Keep the chemical injection lines as short as possible to minimize air binding and leaks.
3. Make sure the chemical feed pump activates when the well pump turns on. The well pump and the chemical feed pump should be on the same circuit. *If multiple wells are in use*, the chemical feed pump must be paced to flow using a water meter. An electrical signal is sent out by the water meter to the chemical feed pump. As the meter turns faster, the speed of the pump increases.
4. Check the chemical feed pump to make sure the stroke and feed settings are set as close to 50% as possible for each. Chemical feed pumps work best when the stroke and feed are within the range of 25% to 75%.

**Questions? Contact the Maine Drinking Water Program, Field Services Section at (207) 287-2070**

5. Remove dust and other debris from the chlorine solution tank. Keep the chlorine solution tank covered in a cool, dry area. Make sure that dust, debris and insects can not enter the top of the tank.
6. If you use a hose to fill the chlorine solution tank with water, *do not leave the hose in the tank* after you're done filling it. This is a hazardous cross connection that can carry serious health risks.
7. Use an initial chlorine solution ratio of about 1 part 5.25% sodium hypochlorite (household bleach) to 15 parts water. Write down the date and the amount of bleach and water added to the tank. Use this information to help determine whether you should increase or decrease the solution strength later to get the correct chlorine residual.
8. The target chlorine residual range is 0.2 mg/l to 0.7 mg/l in the system. Purchase a DPD method, free chlorine, low range (0 mg/l to 3.5 mg/l) chlorine test kit. A pool test kit is NOT acceptable. Follow the instructions in your chlorine test kit to measure chlorine residual. Pick a sample point in the distribution system that represents the average water use. **Report the chlorine residual levels to the Drinking Water Program on the enclosed Small Water System Chlorination Report Forms each month!**
9. You may find that the chlorine residual is too high or too low. You can either increase or decrease the solution strength to compensate for the chlorine residual levels, or you can make small adjustments (in 5% increments) in the stroke and feed rate of the feed pump.
10. Figure 1 shows a typical installation of a continuous chlorination disinfection system. The parts added to the existing well and pressure tank system are the:
  - chemical feed pump
  - chlorine solution tank
  - chlorine contact tank.

The chemical feed pump draws the chlorine solution from the chlorine solution tank and pumps it into the water line from the well. The chemical feed pump is electrically wired so that each time the well pump comes on, the chemical feed pump turns on. This ensures that the only time chemicals are injected into the water supply is when the well pump is on. A water treatment installer can recommend the size of the chemical feed pump based on flowrate from the well and operating pressure. Be sure to request a flooded suction pump with an off gassing head. These items will make the pump easier to maintain and operate.

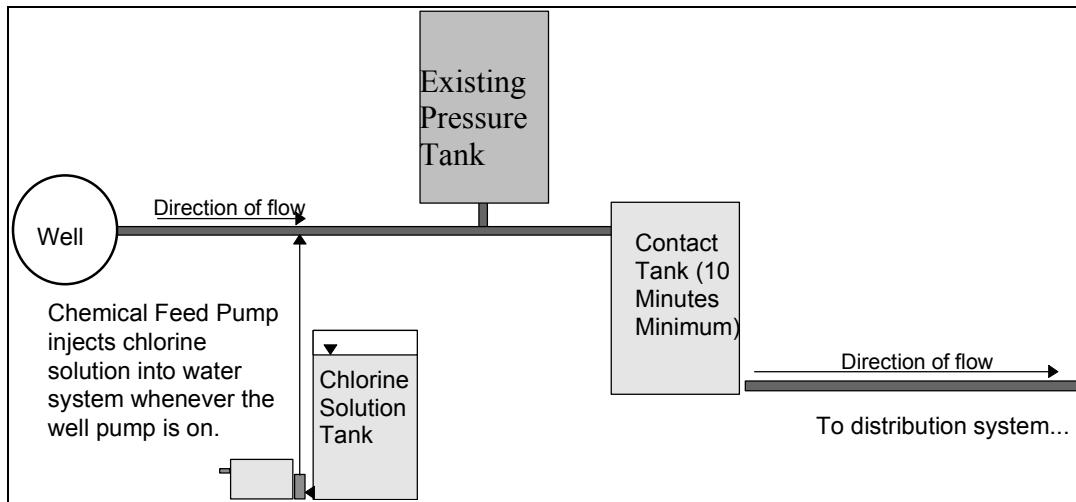
11. The contact tank is where the bacteria are inactivated. The longer the chlorine solution is in contact with the bacteria the greater chance there is that the bacteria will be inactivated. The DWP requires systems to have a minimum of 10 minutes of contact time before chlorinated water reaches the first customer or available tap.

The size of the detention tank is calculated by the formula below.

$$\text{size of tank (gallons)} = (10 \text{ minutes}) \times (\text{pump rate in gallons per minute})$$

For example: Your well pump pumps at a rate of 5 gallons per minute (gpm). 5 gpm times 10 minutes equals 50 gallons. 50 gallons is the size of the detention tank needed to get 10 minutes of detention time.

12. Finally, ensure that you have your pump supplier's number handy for emergency repairs. Familiarize yourself with the parts of the pump and keep the owner's manual nearby.



**Figure 1: Continuous Chlorination Disinfection System**